

# A Critical Appraisal of the Legal and Institutional Arrangement for Wetlands Management in South Africa.

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## Research Article

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# Abstract

Policies and institutional frameworks are some of the entering points in mainstreaming the sustainable management of ecosystems such as wetlands. Wetlands are ecological systems that have been internationally acclaimed as natural and cost-effective mechanisms to mitigate disaster risks and address the negative impacts of climate change while providing local livelihoods. However, the continuous degradation of wetlands in many parts of the world including South Africa is concerning and this can be linked to ineffective legislative and institutional arrangements for wetlands management. Using questionnaires, key informant interviews and field observation, this paper assessed the legal and institutional frameworks for the sustainable management and conservation of protected, private and communal wetlands in South Africa. The results indicated that fundamentally there was no direct wetland legislation in South Africa and this is happening more than 47 years after South Africa signed and ratified the Ramsar Convention on the wise-use and conservation of wetlands. The results also indicated that there was poor coordination of important wetland stakeholders. Thirdly, there were many Expanded Public Works Programmes (EPWPs) with overlapping functions in the management of wetlands in South Africa. The key recommendations were that a national policy on wetlands should be enacted in South Africa like is the case in Uganda and that all the EPWPs be unified under a single control structure with defined roles and monitoring systems like the case with Environmental Protection Authority (EPA) in the USA. The study further recommend that effective wetlands forums be put in place and the dysfunctional ones be rejuvenated. Lastly, policy makers should be made more conscious on the beneficial functions of wetlands in providing livelihoods, reducing disaster risks and adapting to climate change in South Africa

## Introduction

Wetlands are “*transitional land between terrestrial and aquatic systems where the water table is usually at or near the surface, or land that is periodically covered by shallow water and which in normal circumstances support or would support vegetation that is typically adapted to saturated soils*” (Republic of South Africa 1998: 9). Wetlands are also “*Areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water, the depth of which at low tide does not exceed six meters.*” (Ramsar Convention 1971 in Barbier, Acreman and Knowler 1997: 1). These two definitions of wetlands point to the fact that wetlands are diverse ecosystems and can occur at different geographical areas. While the second definition is very broad, it also poses a challenge in wetlands delineation.

Wetlands are important ecosystems in the lives and wellbeing of both rural and urban communities around the world. Well-functioning wetlands are green infrastructure that mitigate disaster risks such as floods, droughts, storms, fires to name but a few. They also assist communities to mitigate and adapt to climate change. Besides, wetlands provide livelihoods for millions of people especially in the rural areas. The way wetlands are managed depend largely on the legal and institutional arrangements for wetlands

management in the country or region. This article makes a critical evaluation on the effectiveness of policies and institutions involved in wetlands management in South Africa.

Wetlands management, protection and conservation find expression in many international agreements that include the Ramsar Convention of 1971, Convention on Biological Diversity of 1992, Convention on the Conservation of Migratory Species (CMS), Bonn Convention of 1979 (which came into force in 1983), Agenda 21 of the United Nations Conference on Environment and Development of 1992, World Summit on Sustainable Development of 2002. More recently wetlands also find central stage in international agreements like the Sendai Framework for Disaster Reduction (SFDR) 2015–2030, the Paris Peace Agreement on Climate Change and the Sustainable Development Goals (SDGs) (Amstrong 2009; Ramsar Convention Secretariat 2010; Kidd 2011; Keevy 2012; Glazewski 2013; Russi et al. 2013; UNISDR 2015; IPCC 2015; UNDP, 2015).

In South Africa there is actually no wetland protection Act and many legislations that address wetland management in South Africa are haphazard and uncoordinated in their implementation (Kidd 2011; Glazewski 2013). The main legislations that mention wetland issues in South Africa include; the National Water Act (NWA) 36 of 1998, National Environmental Management Act (NEMA) 107 of 1998, Conservation of Agricultural Resources Act (CARA) 43 of 1983, National Environmental Management: Biodiversity Act 10 of 2004, National Environmental Management Act: Protected Areas Act 57 of 2003, National Forest Act 84 of 1998, and National Heritage Resources Act 25 of 1999. The three main Acts which mention wetland management as part of their general mandate are the NWA, NEMA and CARA (Republic of South Africa 1983; Republic of South Africa 1998a, b).

In South Africa leading government departments with legal mandates on wetland issues include the Department of Water and Sanitation (DWS), the Department of Environmental Affairs and Tourism (DEAT), the Department of Agriculture, Fisheries and Forestry (DAFF). In the past, each of these departments had a National Resources Management Programme (NRMPs), which included the Working for Water (WfWater) for DWS with the specific mandate to clear alien and invasive species while creating employment, Working for Wetlands (WfW) under DEAT with the mandate to rehabilitate and restore degraded wetlands while also creating employment and LandCare South Africa for DAFF, which dealt with rehabilitating agricultural land. However, recently these NRMPs have all been placed under the DEAT (now called DEA) under the Extended Public Works Programmes (EPWPs) (DEA 2015). Working on Fires (WoF) and Working for the Coast (WftC) has also been added to the list of the EPWPs and all five are popularly referred to as the “Working for Programmes” (Kotze 2000; Collins 2006; SANBI 2013; DEA 2015). Besides these National Departments and EPWPs, there are some NGOs whose activities relate to wetlands, like the Mondi Wetland Project (MWP) and the Endangered Wildlife Trust (EWT). From this background information, one starts getting a sense of inherent coordination and accountability issues in the manner in which legal and institutional arrangement for wetland management are handled in South Africa.

About 50% of wetlands in South Africa have been degraded (Kotze 2000; Grundling 2012) and this is very worrying especially under the current conditions of increasing disaster risks exacerbated by the impacts of climate change. Wetlands provide many valuable ecological services to local communities including those for mitigating and adapting to climate change (MA 2005; Collins 2006, Kotze 2012), but they are also very sensitive ecosystems. The wise and sustainable management of wetlands depend to a great extent on the effectiveness of the legal and institutional frameworks that are in place in a country (RCS 2010). In South Africa, there is a problem with the legal and institutional framework that guide wetlands management, hence many wetlands have been degraded or lost and the situation is continuing unabated. Two critical questions then are: How does the legal and institutional arrangement inform the sustainable management of wetlands in South Africa? Secondly, are wetlands sufficiently protected so that they can sustainably provide ecosystem services especially regulatory services which help to reduce disaster risks and adapt to climate change in South Africa? Answers to these two questions will provide policy makers with evidence to rethink and formulate more effective legal and institutional frameworks for wise and sustainable management of wetlands in South Africa as well as other countries facing similar problems.

## Methods

This paper based its philosophical underpinning on the post-positivist and interpretivist approaches (Babbie et al. 2008). The post-positivist approach was suitable because this article deals with a real world problem and uses a multiple method of data collection with a small sample size (Okeke and Van Wyk 2015). The study also incorporated the more interpretivist traditions in social science (Creswell 2003; Fabinyi et al. 2014), because the laws are drafted and implemented by humans and the institution are operated by humans who manage natural resources, which in this case are wetlands (Creswell 2003). The fact that humans and their experiences are involved in wetlands management brings in the social dimension of this study and this aspect relates to the interpretivist paradigm. The close interaction between the researcher and the respondents during questionnaire administration and field observation tallied with the interpretivist approach. Meanwhile detailed objective description of the collected data that reflected the experiences of the respondents on wetlands management informed the final conclusions in line with the interpretivist paradigm (Bertram and Chritiansen 2014).

A hybrid of both quantitative and qualitative approaches was adopted to address the ontology and epistemology of the research (Babbie et al. 2008). Mixed method (quantitative and qualitative) usually uses four popular approaches which include explanatory, exploratory, triangulation and embedded designs (Creswell 2014). The triangulation, parallel or concurrent mixed approach was applied as both the quantitative data from the questionnaire (composed mainly of closed-ended questions) and qualitative data from the interviews (with open-ended questions) and field observation were collected at the same time before analysis.

Two sets of questionnaires were administered to private and communal wetlands users. For the purpose of assigning responsibility in wetland management to an identifiable individual, two categories of wetland owners/users were identified. Where the owner of the wetland could be identified, such was

classified as “*private*”, meaning government protected wetlands (including those owned by conservation agencies like SANParks) were treated as private to distinguish them from communal owned wetlands, which are collectively owned. A total of 176 questionnaires, 93 for communal and 83 for private wetland users were administered and analysed.

Face to face and where impossible, telephonic interviews were used to gather data from three types of specialists and they included wetland specialists (n = 5), environmental and disaster management specialists (n = 8) and environmental law specialists (n = 2). A detailed field observation was carried out on 21 randomly selected wetlands comprising seven communal wetlands and 11 privately owned wetlands. See Table 1 for a summary.

Table 1  
Summary of data collection tools and sample size

Data collection tool	Sample size
1. Questionnaire	176 respondents
2. Key Informants interview	15
3. Field observations	21 wetlands

Three protected wetlands (Seekoeivlei, Golden Gate and Braamshoek wetland) were also observed. A pilot study was conducted in six wetlands (two in protected areas, two in communal and two in privately owned properties) to obtain a proportional balance. In addition to the pilot study, three Master’s and three PhD students as well as three senior researchers were recruited to comment on the data collection tools. All these measures added validity and reliability to the collected data (De Vos et al. 2005). Participation in the research was voluntary, no names were required on the questionnaire to keep the respondents anonymous, due procedures were followed to obtain any document that was consulted and the ideas of other researchers were duly acknowledge in terms of embedded and final list of reference. The researcher also obtained Ethical Clearance Certificate from the University of Free State General Ethic Committee.

An Excel Spreadsheet was used to capture data and the SPSS was used to analyse the quantitative data. Qualitative data was inductively analysed into dominant themes that emerged from the raw data (Maree 2007).

## Results

Regarding communal wetlands, more males (62.4%) than females (37.6%) completed the questionnaire. Field observations confirmed this split, since most often men were seen herding cattle in the communal wetlands. The median age of the respondents was 30–39 years and the majority were either unemployed or self-employed (63.4%). Most respondents (92.3%) had used the wetland for more than five years. Though these were communal wetlands, only 36.6% could correctly state that they were communally owned. The socio-demographic data is summarized in Table 2 below.

Table 2  
summary of socio-demographic background of communal wetlands respondents

<b>Parameter</b>	<b>Number</b>	<b>Percentage</b>
Gender	35	37.6
Female	58	62.4
Male		
Modal age	30–39	51.6
Employment status	39	41.9
Unemployed	20	21.5
Self-employed	34	36.6
Employed		
Number of years using the wetland – More than 5 years	84	92.3
Owner of the wetland	38	40.9
Government	34	36.6
Communally-owned	17	18.3
Don't know		

Most of the private wetland owners were male (80%) while (19.3%) were female. The majority of respondents (80.7%) were a median age of between 45–54 years. Many (77.1%) had used the wetland for more than five years of which 60% had more than 10 years' experience. Most of the respondents (71%) had either an undergraduate or a postgraduate academic qualification (see Table 3 below).

Table 3  
summary of socio-demographic background of private wetlands  
owners

Parameter	Number	Percentage
Gender	16	19.28
Female	67	80.72
Male		
Median age	45–54 years	54.2
Mean age	51.98 years	
Modal age	55–64 years	31.3
Education	7	8.4
Primary	17	20.5
Matrix	30	36.1
Undergraduate	29	34.9
Postgraduate		
Number of years in using the wetland	64	77.1
More than 5 years	42	50.6
More than 10 years		

## Wetlands threat

Wetlands threat are predominantly from human factors as indicated in Table 4 below. These are the main threats that account for 50% of wetlands in South Africa being lost. Good legal and institutional frameworks could reduce these threats

Table 4  
Perceived wetlands threats by private wetland users

<b>Kendall's W Test</b>	
Threat	Mean rank
Lack of awareness on wetland benefits	8.94 <sup>1st</sup>
Uncontrolled fire	8.81 <sup>2nd</sup>
Overgrazing	7.64 <sup>3rd</sup>
Upper catchment management activities	7.28 <sup>4th</sup>
Sedimentation	7.23
Lack of material resources to manage	7.14
Soil erosion	6.96
Lack of human management capacity	6.70
Change in water regime	6.45
Invasive alien species	6.19
Pollution	6.12
Conversion to other uses	5.87
Climate variability	5.65

<b>Test Statistics</b>	
N	83
Kendall's W <sup>a</sup>	0.93
Chi-Square	92.91
df	12
Asymp. Sig.	.000

## Wetlands laws and policies

Asked whether there were any laws that regulate the use of wetlands, 93.5% of the communal wetlands users responded that there was none (Table 5), while 68.7% of the private wetlands owners reported there were no clear laws. In the same line, 74% of the communal wetland respondents attested that if there were any laws, then these laws were poorly implemented as opposed to 69% for private users (Table 5).

Table 5  
Laws that guide the use of wetlands (communal)

Response	Communal		Private	
	Frequency	Percentage	Frequency	Percentage
Yes	6	6.5	32	39.5
No	87	93.5	51	61.5
Total	93	100	83	100
Clarity of wetland laws if any to the users				
Not Clear	69	74%	57	68.7
Clear	24	26	26	31.3

The two environmental law specialists cited the following challenges in implementing environmental law, which cover wetlands in South Africa:

- Lack of adequate capacity and resources both financial and human.
- Other considerations from the national government such as economic growth and job creation always undermine environmental considerations such as wetland conservation.
- Poorly defined environmental powers and functions that has always resulted in duplication of powers and functions such as where two different executives perform the same environmental function guided by different laws.
- With specific reference to wetlands, it was noted that the definition of wetlands in the National Water Act was complicated, such that contrary to the law, construction usually takes place in wetlands. This situation may suggest lack of clear understanding of wetlands and laws related to wetlands or can be a symptom of violation of sectoral laws dealing with wetland conservation since there is no specific law on wetlands in South Africa.

## Wetlands stakeholders' cooperation and coordination

In terms of cooperation between wetland stakeholders, which included private land owners, the local community, the government and Non-Governmental Organizations, the general feeling amongst the respondents was that the cooperation was poor (Table 6). In the same vein, 77.1% of the communal wetland users indicated that wetland issues were not well coordinated. The Perception Index was calculated for the private wetlands owners and with a value of -0.94 (Table 6), it was clear that the legal and institutional arrangement for wetland management in the study area was poor.

Table 6  
Perception index on wetland legal and institutional issues

Perception statement	Strongly Disagree (-1)	Disagree (-0.5)	Neutral (0)	Agree (0.5)	Strongly agree (1)	Mean Score
Wetland issues are well coordinated in the free state province	15 (18.1)	49(59.0)	1(1.2)	17(20.5)	1(1.2)	-0.36
There are clear laws with regards to wetlands management in FS province	18(21.7)	39(47.0)	3(3.6)	21(25.3)	2(2.4)	-0.28
Laws regarding wetland managements are properly implemented by wetland managers	12(14.5)	49(59.0)	2(2.4)	17(20.5)	3(3.6)	-0.30
Wetland perception index						-0.94

## Institutional placement of the wetland function

Asked which government department could best handle the management of wetlands issues, the results showed that 43.4% preferred the Department of Agriculture, 36.1% preferred the present status quo with the Department of Environmental Affairs, 14.5% indicated the Department of Water Affairs while 6% cited other departments (Fig. 1). Meanwhile, there are other important role players in wetlands management in South Africa with varying stake and influence on wetland matters (Table 7).

Table 7  
Wetlands stakeholders' analysis

	LOW INFLUENCE	HIGH INFLUENCE
HIGH STAKE	Important stakeholder group perhaps in need of empowerment C	Most critical stakeholder group A
LOW STAKE	Stakeholder group with least priority D	Useful for decision and opinion formulation, brokering B
	Key A: WfWetlands (SANBI); Land owners; Mondi wetland project; Crane Foundation	
	B: DEAT; DWA; DAFF; WfWater; Land users; CMAs; SANPARKS; Developers, Town planners	
	C: Farmers; Local Community; Provincial Wetland Forums	
	D: Landcare	

The ideas of the interviewed environmental law specialists are summarised in table eight below

Table 8  
Responses from the two environmental law specialists

Questions	Responses
1. Do you know of a wetland policy in South Africa	ELP1 = No ELP2 = No
2. Which other general environmental law or policy relate to wetlands in South Africa	ELP1 = NEMA, NWA ELP2 = NEMA, NWA, NEMA: Biodiversity
3. Are environmental laws effectively implemented in South Africa	ELP1 = No ELP2 = No
4. State reasons to support Q3 above	<p>ELP1 – Lack of adequate capacity and resources</p> <ul style="list-style-type: none"> <li>- Priority considerations from national government on issues like economic growth, job creation over conservation of wetland</li> <li>- Poorly defined environmental power and functions</li> <li>- Definition of wetland in NWA is complicated</li> <li>- Lack of understanding of wetland and general environmental laws</li> <li>- Corruption from those enforcing environmental law</li> </ul> <p>ELP2 – Reactive nature of environmental law</p> <ul style="list-style-type: none"> <li>- Lack of trained enforcers of the law</li> <li>- Lengthy litigation process</li> <li>- Lack of resources</li> </ul>
5. Suggestions for better solutions	<p>ELP1- Capacity building and education on wetlands</p> <ul style="list-style-type: none"> <li>- Allocation of more resources both human and financial</li> <li>- Involvement of courts to clarify roles and functions related to wetlands</li> </ul> <p>ELP2- Train more environmental law enforcers</p> <ul style="list-style-type: none"> <li>- Speed up litigation process</li> <li>- Avoid duplication of functions</li> </ul>

## Discussion

Most communal wetland users were self-employed or unemployed, and inexperienced on wetland issues. Meanwhile private wetland owners in the study area had a better education and rich experience on

wetland issues. This socio-demographic parameter had an impact on the wise and sustainable usage of wetlands as wetlands in private property were observed to be in a better ecological state than those in communal wetlands.

The interviewed environmental law experts identified ignorance, limited resources and lack of clarification of roles among wetland stakeholder as risk factors, so they made some suggestions to alleviate the challenges on wetlands management in South Africa. These suggestions included capacity building and education on wetlands, the allocation of more financial and human resources for wetlands management, the involvement of courts to clarify roles and functions related to wetlands and to minimize the duplication of functions. The duplication of functions and the sacrifice of wetlands in pursuit of economic growth and job creation was also identified during the analysis of the various “Working-For Programmes” under the Expanded Public Work Programme. The violation of related wetlands legislations like the National Water Act and the National Environmental Management Act (NEMA) was also identified during field observations. A classic example was the building of the Frontier Casino and the Dithlabeng Mall on a wetland in Bethlehem, a project which went into litigation between the developers and conservationist.

Regarding the institutional placement of wetland issues, the Department of Environmental Affairs scored lower than the Department of Agriculture, Forestry and Fisheries (Fig. 1). Two possible reasons for this split could be that most of the respondents were farmers and therefore preferred their line department or that many were not satisfied with the services from the Department of Environmental Affairs which currently host wetland issues. The lack of trust between some private land-owners and the WfW on issues of wetland rehabilitation was identified during field study and also reported by two out of the five wetland specialists that were interviewed. This might support the placement change of the wetland function to the Department of Agriculture. However, the placement of wetland may not be the problem, but poor implementation of sectoral laws related to wetlands, lack of education, awareness and inadequate resources for better management of wetlands in the study area.

Inadequate legal and institutional arrangements expose wetlands to many threats in the study area. Top in the ranking was the lack of awareness on wetland benefits, followed by uncontrolled fire and then overgrazing (Table 4). These results from the administered questionnaires collaborate with interviews conducted with key informants or experts on wetland issues.

## **The legal and institutional arrangement for wetland management**

The lack of a directive policy on wetland makes wetland issues being addressed in a myriad of national sectoral legislations that are most often not properly implemented. The responses on wetland laws were in line with the reviewed literature on legal and institutional arrangements for wetland management, which indicated that there was no national wetland policy in South Africa. The National Environmental Management Act (NEMA), the Conservation of Agricultural Resources Act (CARA) and the National Water

Act (NWA), which were the closest identified sectoral legislations, did not address wetlands issues specifically and even where they did, the implementation of these laws were problematic for reasons that varied from ignorance, lack of competent implementers, lack of enforcement of the laws and lack of resources for effective implementation. This was confirmed in the field observation and by the environmental law experts. The legal status of wetlands in South Africa is different from that of a country like Uganda, which besides having wetland related legislations (like the NEMA and NWA in South Africa), also have a specific national policy on wetlands (The Republic of Uganda 1995; Opio 2008). Though the current situation may be changing, wetlands were better managed in Uganda, partly because there is a specific national wetland policy in the country and partly because there are well established and good bottom-up institutional arrangement for effective wetland management and implementation of wetland laws (The Republic of Uganda 1995; Opio 2008). The degradation of ecosystems such as wetlands necessitates better financial negotiations, policies implementation and better management (UNDP 2012).

The institutional arrangements for wetland management in South Africa is plagued by other problems. Three governmental departments, Department of Water and Sanitation (DWS), Department of Agriculture, Forestry and Fisheries (DAFF) and Department of Environmental Affairs (DEA) all have a direct role on wetland issues. Each of these departments have their core issues to which wetlands are added as a small component. There are also Extended Public Work Programmes (EPWPs) with direct or indirect roles on wetlands, which are all placed under the DEA. Sometimes assigning responsibilities and accountability is a problem amongst the EPWPs. For example, the primary role of Working for Wetlands (WfW) is to rehabilitate and restore wetlands while at the same time it is charged with creating jobs to reduce local unemployment in the rural areas. On the other hand the primary role of Working for Water (WfWater) is the clearing of alien and invasive species. Now the question is "whose responsibility is it to deal with invasive and alien species located in a wetland?" Though WfW could clear such invasive species as part of wetland rehabilitation, there is a clear overlap of function in this case and enough fund may not be available for WfW to effectively meet its assigned primary responsibilities. Many private wetland owners complained and field observation supported that invasive species were a problem in the study area (Fig. 2). The balance of rehabilitating wetlands and creating local jobs is also challenging to wetland managers in the study area. The scale may finally tilt toward one side given limited financial resources and high unemployment rate in the country. Political interference was also reported in the operational activities of these EPWPs. The process of selecting wetland for rehabilitation is also not clear (Kotze 2009). The DEA is overloaded with national responsibilities given that it deals with many broad environmental issues including climate change with limited financial and human resources.

Proper management of wetlands involves many stakeholders. A stakeholder in wetland management means any individual, group or community living within the influence of the site, and any individual, group or community likely to influence the management of the site. This will obviously include all those who are dependent on the wetland for their livelihood (Kotze et al. 2009). Effective wetland management must encompass the past and present human use of the wetland, the current and future impacts, as well as ways that sustainable wetland use can be achieved (Chatterjee et al. 2008). The best way to achieve this is through integrated wetland management. Integrated wetland management brings various wetland

stakeholders together, who then develop a vision, agree on shared values and behaviours, makes informed decisions and act together to manage the wetland. The success hinges on the willingness of sectoral stakeholders to work together since effective management of wetlands requires a multidisciplinary approach that integrates technical, economic, environmental, social and legal aspects of natural resources management at catchment scale (Wageningen International 2009). Such a well-coordinated approach is key for the wise and sustainable management of wetlands. The sustainable wetland management approach is holistic and is bottom-up but in the case of South Africa, the approach is top-down dominated by EPWPs especially the WfW.

The identified wetland stakeholders had varying degrees of influence and interest on wetlands affairs (Table 5). Though the classification was not scientifically weighted, it gave an indication of which stakeholders had high influence and can be lobbied for wetland issues or those with very high stake who may champion effective management of wetlands in the study area. The involvement and coordination of these stakeholders is currently poor and ineffective.. To highlight the problem of wetland stakeholders' coordination one can cite the non-functioning of the Wetland Advisory Forum in many parts of the country. A case in point is the Wetland Advisory Forum for the Free State and Northern Cape Provinces. This forum was established to act as a platform that brings wetland stakeholders together. Membership in this forum was never representative of all the wetland stakeholders and for the past two years, the forum has not met. Effort to revamp this forum is slow and stakeholders still show lack of commitment to this important wetland platform.

## **Conclusion**

Wetlands are not properly protected by legislation in South Africa. There is no national wetland policy like the case in Uganda. Wetlands in South Africa are covered in sections of sectoral legislations, which are poorly coordinated and ineffectively implemented.

There are so many Public Work Programmes in South Africa with direct or indirect roles on wetland management. These programmes are poorly coordinated, often face the problem of balancing job creation and meeting other assigned responsibilities like rehabilitating or restoring wetlands as well as clearing invasive and alien plants. The EPWPs lack both human and financial resources to effectively and sustainably manage wetlands. Ignorance of wetland functions and values is also a big threat to wetland conservation and sustainable use as demonstrated in the conversion of ecologically important and sensitive wetland in the eastern Free State Province

## **Recommendations**

The government through the Department of Environmental Affairs should draft a national wetland policy that can be applicable to all spheres of government (local, provincial and national). There is currently no national policy on wetlands while related sectoral policies such as the National Environmental Management Act and the National Water Act are poorly implemented or do not correctly apply

environmental tools such as the environmental impact assessment (EIA), strategic environmental assessment (SEA), and cost benefit analysis (CBA) before deciding on alternative uses of wetlands.

The government should also harmonise the functioning of the various “Working For” programmes under a unified command structure. Such a structure could be an independent para-public structure linked to the ministry of Water Affairs and Sanitation or the Department of Environmental Affairs. These EPWPs should also be well resourced in order for them to create more jobs and also accomplish their assigned environmental tasks.

It is recommended that a properly constituted platform for the coordination of all wetlands stakeholders at local, provincial and national level be created or revived. These platforms should include representatives from the Department of Environmental Affairs, Department of Water Affairs and Sanitation, Department of Agriculture, Private wetlands owners and users, local chiefs and traditional leaders, conservationists, environmentalists, Department of Education, Academia and researchers and other identified role players. Participation by stakeholders in these wetland forums should either be a line function or community service imperatives and be evaluated during performance appraisals by respective line managers. A good start will be to re-establish a regulated provincial wetlands advisory forums with an allocated budget.

At international level, there is need to build synergy and find common approaches among conventions such as the Ramsar Convention of 1971 on wetlands, the Convention on Biodiversity (CBD), the United Nations Framework Convention on Climate Change (UNFCCC), the United Nations Conference on Environment and Development (Rio + 20) of 2012, the United Nations World Conference on Disaster Reduction (UNWCDR) the latest held in Sendai Japan in March 2015, the Sustainable Development Goals (SDGs) (UNDP, 2012; 2015). Once such synergy is built at international level, it would cascade down to national level and this will enhance wetland management even at local level.

## Declarations

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# References

1. Armstrong A (2009) Wet-legal: wetland rehabilitation and the law in South Africa. Water Research Commission Report No.TT338/09. Water Research Commission, Pretoria
2. Barbier EB, Acreman M, Knowler D (1997) Economic valuation of wetlands: a guide for policy makers and planners. Ramsar Convention Bureau, Gland
3. Babbie E, Mouton J, Vorster P, Prozesky, B (2008) The practice of social research. South Africa edition. Oxford University Press, Cape Town
4. Bertram C, Christiansen I (2014) Understanding research: an introduction to reading research. Van Schaik Publishers, Pretoria
5. Chatterjee A, Phillips B, Stroud DA (2008) Wetland management planning. a guide for site managers. WWF, Wetlands International, IUCN & Ramsar Convention
6. Collins NB (Ed) (2006) Wetlands: the basics and some more. Free State Department of Tourism, Environmental and Economic Affairs, Bloemfontein
7. Collins NB (2011) Phytosociology and ecology of selected depression (pan) and valley-bottom wetlands of the Free State Province. Dissertation, University of the Free State
8. Creswell JW (2003) Research design: qualitative and quantitative and mixed-method approaches. 2<sup>nd</sup> edition Sage Publications, Thousand Oaks, CA
9. Creswell JW (2014) Research design: qualitative, quantitative and mixed methods approaches, Fourth edition. SAGE, Los Angeles
10. Department of Environmental Affairs (DEA) (2015) Projects and programmes. [Online]. Available at <https://www.environment.gov.za/projectsprogrammes>. (Accessed 26/02/2015)
11. De Vos AS, Strydom H, Fouche CB, Delpont CSL (2005) Research at grass roots for the social sciences and human service profession, Third edition. Van Schaik Publishers, Pretoria
12. Fabinyi M, Evans L, Foale SJ (2014) Social-ecological systems, social diversity, and power: insights from anthropology and political ecology. *Ecology and Society* 19(4):28 <http://dx.doi.org/10.5751/ES-07029-190428>
13. Glazewski J (2013) Environmental law in South Africa. LexisNexis South Africa, Durban
14. Grundling P-L (2012) An overview of expected impacts of climate change on wetlands of South Africa. COP 17 Side Event: Ecosystem-based adaptation-South Africa case studies. COP17, Durban
15. Keevy I (2012) Environmental law: Lecture notes for MOB 708. UFS-CEM, Bloemfontein
16. Kidd M (2011) Environmental law, Second edition. Juta & Company Ltd, Cape Town
17. Kotze D C, Breen CM, and Klug JR (2000) Wetland-use: a wetland management decision support system for South African freshwater palustrine wetlands. South African Wetlands Conservation Programme. Department of Environmental Affairs and Tourism, Pretoria
18. Kotze D (2010) WET-sustainable use: a system for assessing the sustainability of wetland use. Water Research Commission Report No. TT 438/09, Water Research Commission, Pretoria.

19. Kotze DC, Breen CM, Nxele IZ, Kareko J (2009) Wet-management review: the impact of natural resources management programmes on wetlands in South Africa. WRC Report No.TT 335/09. Water Research Commission, Pretoria
20. Kotze DC (1996) Wetlands and people: what benefits do wetlands have for us and how are these benefits affected by our land-use activities? Wetland-use booklet 1. WESSA Share-Net Resources, Wildlife Society of South Africa, Howick
21. Maree K (2007) First steps in research. Van Schaik, Pretoria
22. Millennium Ecosystem Assessment (MA) (2005) Ecosystems and human well-being: wetlands and water synthesis. World Health Organization, Geneva.
23. Okeke C, Van Wyk MM (Eds) (2015) Educational research: An African approach. Oxford University Press, Cape Town
24. Ollis D, Snaddon K, Job N, Mbona N (2013) Classification system for wetlands and other aquatic ecosystems in South Africa: user manual: inland systems. SANBI, Pretoria
25. Opio M (2008) An institutional analysis of the management of wetlands resources: a comparative study of Floahreppur Municipality in South Iceland and Oyam District in Uganda. [Online]. Available at [www.unulrt.is/static/fellows/document/moses-1-pdf](http://www.unulrt.is/static/fellows/document/moses-1-pdf). (Accessed on 28 March 2013)
26. Ramsar Convention Secretariat (RCS) (2010) Laws and institutions. Ramsar handbooks for the wise use of wetlands, Fourth edition, volume 3. Ramsar Convention Secretariat, Gland
27. Republic of South Africa (1983) The conservation of agricultural resources (CARA), Act number 43 of 1983. Government Printers, Pretoria
28. Republic of South Africa (1998a) The national environmental management act (NEMA) act number 107 of 1998. Government Printers, Pretoria
29. Republic of South Africa (1998b) National water act (NWA) act number 36 of 1998. Government Printers, Pretoria
30. Reynolds SJ, Rohli RV, Johnson JK, Waylen PR, Francek MA (2015) Exploring physical geography. McGraw Hill, New York
31. Russi D, ten Brink P, Farmer A, Badura T, Coates D, Forster J, Kumar R, Davidson N (2013) The economics of ecosystems and biodiversity (TEEB) of water and wetlands. IEEP, London and Brussels. Ramsar Secretariat, Gland
32. South Africa Biodiversity Institute (SANBI) (2013) Working for wetlands. [Online]. Available at <http://wetlands.sanbi.org>. (Accessed 28/3/ 2013)
33. The Republic of Uganda (1995) National policy for the conservation and management of wetland resources. Ministry of Natural Resources, Uganda
34. United Nations Development Programme (UNDP) (2012) The future we want: biodiversity and ecosystems-driving sustainable development, UNDP biodiversity and ecosystems global framework 2012-2020. UNDP, New York

- 35. United Nations Development Programme. (2015). *A new sustainable development agenda: The SDGs*. [Online]. Available at <http://www.undp.org/content/undp/en/home/sdgoverview.html> (Accessed 12/12/2015).
- 36. Wageningen International (2009) International training of trainers on wetland management (ICWM-TOT). [Online]. Available at [www.cdic.wur.nl](http://www.cdic.wur.nl). (Accessed 21/04/2014)
- 37. Wetland International (WI) (2013) What are wetlands? [Online]. Available at <http://www.wetlands.org/Whatarewetlands/tabid/202/Default.aspx>. (Accessed 28/3/2013)

## Figures

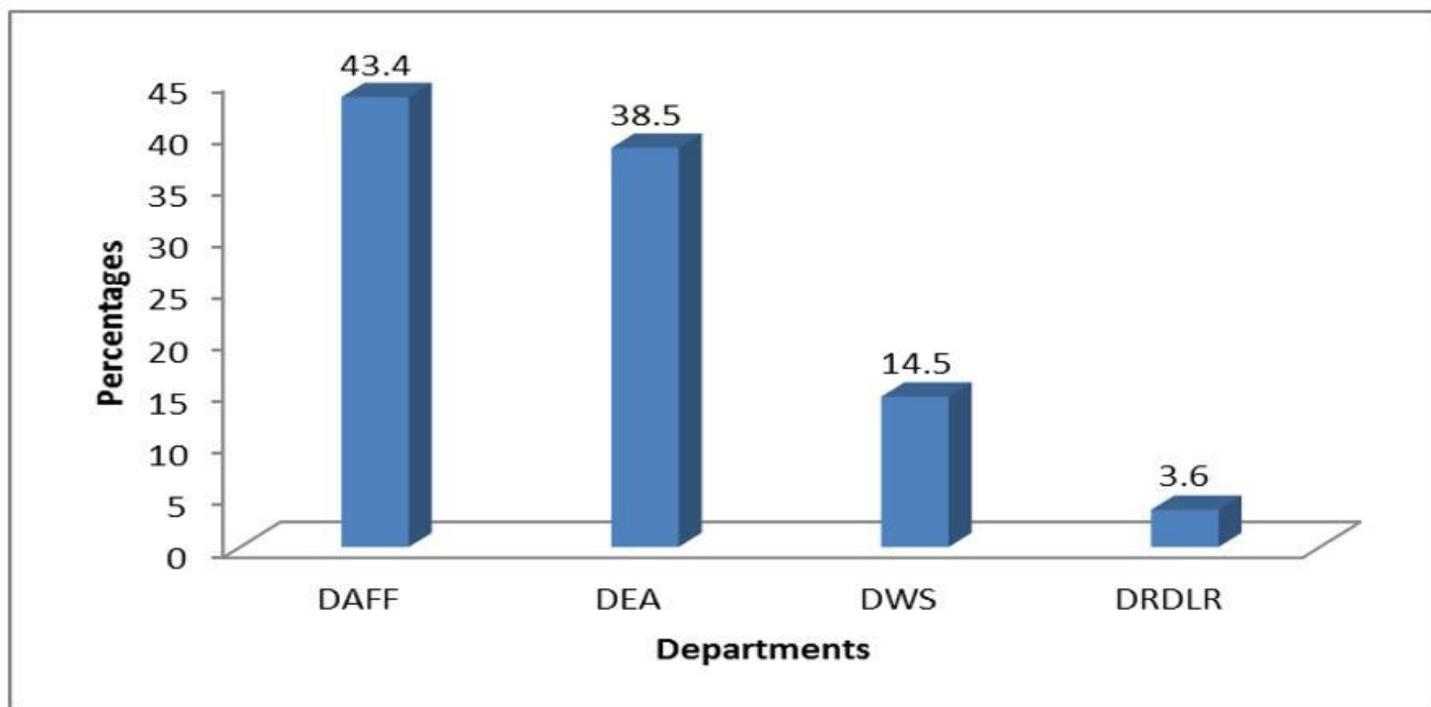


Figure 1

Suggested placement of wetland functions by private respondents



**Figure 2**

Invasive species in a wetland in Harrismith-Van Reenen Pass.